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(concluded)

rubber plate (or rubber-covered roller) to the web to print the image. Anilox rollers are also used in remoistenable glue units and to create "scratch-and-sniff" perfume ads.

✓ (Col. 4, lines 46-51) Whenever a station is used for flexographic printing, a flexographic plate is placed on the blanket cylinder for receiving the liquid vehicle and transferring the liquid vehicle to the substrate for printing. An anilox roller is associated with the flexographic plate for supplying the liquid vehicle which may be an aqueous-based vehicle.

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In the claims:

9. (Amended) Apparatus as in claim 6 further including: said flexographic printing station including a plate cylinder having a flexographic plate thereon, a blanket cylinder, and an impression cylinder;  
a flexographic plate image transferred from said plate cylinder to said blanket cylinder, said image being formed of said metallic coating, said impression cylinder in ink-transfer relationship with said blanket cylinder, said blanket cylinder transferring said metallic coating to said substrate for printing said flexographic plate image on said substrate; and  
an anilox roller associated with said flexographic plate for supplying said aqueous-based vehicle containing said suspended metallic material to said flexographic plate.

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15. (Amended) Apparatus for a combined lithographic/flexographic printing process comprising:  
a plurality of successive printing stations for printing color images on a substrate in a continuous in-line process;  
said printing stations including both lithographic and flexographic printing stations;  
a blanket cylinder at at least a first one of said flexographic printing stations;

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an impression cylinder associated with at least said first one of said flexographic printing stations;

flexographic ink providing means at said at least first one of said flexographic printing stations for applying a flexographic ink to said blanket cylinder to form an image;

a substrate for receiving said flexographic ink image transferred from said blanket cylinder; and at least one subsequent lithographic printing station in said in-line process for receiving said image printed substrate and printing an additional colored ink image on said substrate on top of said flexographic ink image using offset lithography.

21. (Amended) Apparatus as in claim 17 further including halftone printing plates for printing said additional colored ink images.

44. (Twice Amended) Apparatus for a combined lithographic/flexographic printing process comprising:

a substrate;

a plurality of successive printing stations for depositing a series of images on one side of a substrate in a continuous in-line process;

one of said stations comprising a flexographic printing station for printing a liquid vehicle image on said substrate using a flexographic process; and

at least one of said successive printing stations being a lithographic printing station;

whereby said substrate is printed on top of or on the opposite side of that previously printed at said at least one successive lithographic printing stations using the lithographic process in said continuous in-line process.

45. (Twice Amended) Apparatus as in claim 44 wherein at least one image of said series of images at the flexographic printing station is a coating material.

46. (Twice Amended) Apparatus as in claim 44 wherein at least one image of said series of images at said at least one of the lithographic printing stations is an ink.

52. (Amended) Apparatus as in claim 49 further including: said flexographic printing station including a plate cylinder having a flexographic plate thereon, a blanket cylinder, and an impression cylinder;

a flexographic plate image transferred from said plate cylinder to said blanket cylinder, said image being formed of said metallic coating, said impression cylinder in ink-transfer relationship with said blanket cylinder, said blanket cylinder transferring said metallic coating to said substrate for printing said flexographic plate image on said substrate; and an anilox roller associated with said flexographic plate for supplying said aqueous-based vehicle containing said suspended metallic material to said flexographic plate.

55. (Twice Amended) Apparatus for creating a combined lithographic/ flexographic printing process comprising:

a substrate;

a plurality of successive printing stations for depositing a series of images on a substrate in a continuous in-line process;

at least one of said successive printing stations being a flexographic station and comprising:

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- (1) a supply of liquid coating;
- (2) a plate cylinder associated with a blanket cylinder, said plate cylinder having a flexographic plate thereon;
- (3) an anilox roller associated with said liquid supply coating and said plate cylinder for delivering said liquid coating to said flexographic plate to form an image for transfer to said blanket cylinder;
- (4) an impression cylinder for receiving said liquid coating image transferred from said blanket cylinder and printing said image on one side of said substrate; and
- at least one offset lithographic printing station for receiving said substrate and printing on top of or on the opposite side to that previously printed.

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57. (Twice Amended) Apparatus as in claim 56 further including an air dryer associated with each impression cylinder on said flexographic station, said air dryer having sufficient air velocity for drying said liquid coating before the substrate is transferred to the successive printing station in said continuous in-line process.

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58. (Twice Amended) Apparatus for a combined lithographic/flexographic printing process comprising:

a plurality of successive printing stations for depositing a series of images on a substrate in a continuous in-line process, said printing stations including, both lithographic and at least two flexographic printing stations;

a blanket cylinder at at least a first one of said flexographic printing stations;

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(concluded)

flexographic ink-providing means for applying a flexographic ink to said blanket cylinder to form an image on one side of a substrate;  
a substrate for receiving said flexographic ink image transferred from said blanket cylinder; and  
at least one subsequent lithographic printing station in said in-line process for receiving said image printed substrate and printing an additional colored ink image on said substrate on top of said flexographic ink image or the opposite side to that previously printed using offset lithography.

60. (Twice Amended) Apparatus for a combined lithographic/flexographic printing process for printing a multicolored image comprising:

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a plurality of successive printing stations for depositing ink to form a series of images on a substrate in a continuous in-line process, said printing stations including both lithographic and flexographic printing stations;

at least one of said flexographic printing stations having:

- (1) a plate cylinder and a blanket cylinder, said plate cylinder including a flexographic plate having an image thereon for transferring a flexographic color ink image to said blanket cylinder;
- (2) an etched anilox roller for applying a flexographic color ink to said flexographic plate on said plate cylinder;
- (3) an impression cylinder in ink-transfer relationship with said blanket cylinder for transferring said flexographic color ink image from said blanket cylinder to one side of said substrate; and

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(concluded)

at least one of said succeeding printing stations being a lithographic printing station using offset lithography for printing additional colored ink images on top of said flexographic ink image or on the opposite side to that that previously printed.

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64. (Amended) Apparatus as in claim 60 further including halftone printing plates for printing said additional colored ink images.

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66. (Amended) Apparatus as in claim 60 wherein at least one of the successive printing stations is a sheet-fed press.

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72. (Twice Amended) A method of combining lithography and flexographic printing in a continuous in-line process comprising the steps of:

- providing a plurality of successive lithographic and flexographic printing stations for depositing a series of images on a substrate;
- printing a flexographic ink image as one of said series of images on one side of said substrate at least one of said flexographic stations;
- transferring said printed substrate to at least one subsequent printing station in said continuous in-line process; and
- printing an image on the reverse side of said substrate having said flexographic ink image, at at least one of said other subsequent lithographic printing stations with an offset lithographic process in the continuous in-line process.

73. (Amended) A method as in claim 72 further comprising the step of drying said flexographic ink image on said substrate with an air dryer prior to printing colored ink images thereon.

74. (Amended) A method as in claim 73 further including the step of printing a coating on top of said colored ink images at one of said plurality of subsequent printing stations.

75. (Amended) A method as in claim 73 wherein said colored ink images are formed from waterless colored inks.

76. (Amended) A method as in claim 75 wherein said waterless colored inks [forming said colored ink images] are in a solvent-based liquid vehicle.

77. (Amended) A method as in claim 72 further including the steps of:

printing a slurry on one side of said substrate at any of said flexographic printing stations in said continuous in-line process;

using an encapsulated essence in said slurry; and

printing an ink on the reverse side of said substrate at a subsequent printing station in said in-line process.

78. (Twice Amended) A method as in claim 77 further including the step of printing an aqueous-based coating over said slurry.

82. (Twice Amended) A method of combining lithography and flexographic printing in a continuous in-line process comprising the steps of:

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- (1) providing a plurality of successive printing stations for depositing a series of images on a substrate in said in-line continuous process;
  - (2) utilizing an anilox roller to transfer a liquid ink as one of said thin controlled layers to a flexographic plate image at at least one of said printing stations;
  - (3) printing said liquid ink from said flexographic plate image to one side of said substrate;
  - (4) transferring said printed substrate with said liquid ink image to a subsequent printing station in said inline printing process;
  - (5) repeating steps (2)-(4) at subsequent printing stations in said in-line process to achieve a desired opacity ink image on the one side of said substrate; and
  - (6) printing an ink pattern on the reverse side of said substrate using an offset lithographic process.

85. (Twice Amended) A method of combining offset lithography and flexography using a plurality of successive printing stations in a continuous in-line process, at least one of said stations comprising a flexographic printing station for printing an image on a substrate using a flexographic process;

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- (1) printing an image at one or more of said printing stations on said substrate using an offset lithographic process;
  - (2) transferring said image printed substrate to an additional and flexographic printing station and printing at said flexographic and additional printing station a coating on all or part of said image on said substrate;



(3) transferring said substrate to one or more additional printing stations for printing the reverse side of the said substrate; and

(4) printing an image on said reverse side of said substrate at one of said one or more printing stations using an offset lithographic process in the continuous inline process.

86. (Twice Amended) Apparatus for a combined offset lithographic and flexographic printing process comprising:

(1) a substrate;

(2) a plurality of successive printing stations for depositing a series of images selected from a group consisting of lithographic and flexographic inks, coatings and slurries on one or both sides of a substrate in a continuous in-line process;

(3) at least one of said stations comprising a flexographic printing station for printing an image on said substrate using a flexographic process; and

(4) at least one of said successive printing stations being an offset lithographic printing station whereby said offset lithographic printing station is used to deposit one image of said series of images on either side of the said substrate in the continuous in-line process.

87. (Twice Amended) Apparatus for a combined offset lithographic/flexographic printing process comprising:

a plurality of successive printing stations for printing images on a substrate in a continuous in-line process, said plurality of successive printing stations including at least one offset lithographic printing station and at least one flexographic printing station for depositing lithographic inks, and one or more flexographic inks, coatings and slurries on said substrate,

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(concluded) whereby said lithographic inks, and said one or more flexographic inks, coatings and slurries may be printed successively on one or both sides of said substrate in the continuous in-line process.

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89. (Amended) The apparatus of Claim 15 wherein a high-velocity air dryer is associated with the impression cylinder of said at least a first one of said flexographic printing stations.

91. (Twice Amended) Method of combining offset lithographic and flexographic printing in a continuous in-line sheet-fed process, combining the steps of:

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- (a) providing a plurality of successive offset lithographic sheet-fed printing stations for printing images on cut paper sheets,
  - (b) providing one or more flexographic printing stations prior to at least one of said offset lithographic stations for printing a flexographic image on said cut paper sheets, each of said flexographic printing stations comprising,
    - (1) a blanket cylinder, said blanket cylinder including a flexographic plate having an image thereon for receiving a flexographic image on said blanket cylinder,
    - (2) an anilox roller for applying said flexographic image to said flexographic plate on said blanket cylinder, and
    - (3) an impression cylinder in image-transferring relationship with said blanket cylinder for transferring said flexographic image from said blanket cylinder to said cut paper sheets;

at least one of said succeeding printing stations being a lithographic printing station subsequent to said flexographic printing stations, and using offset lithography for printing additional images on top of said flexographic image on said cut paper sheets; and

(c) providing a high-velocity air dryer associated with the impression cylinder of each flexographic printing station for drying the flexographic image printed on said cut paper sheets.

93. (Amended) The method of Claim 91 wherein the printing of the flexographic image is accomplished by the anilox roller being mounted in a flexographic printing station.

94. (Twice Amended) Method of combining offset lithographic and flexographic printing in a continuous in-line sheet-fed process, combining the steps of:

(a) providing a plurality of successive offset lithographic sheet-fed printing stations for printing images on one or both sides of each of a succession of cut paper sheets;

(b) providing one or more flexographic stations prior to at least one of said offset lithographic stations for printing a flexographic image on one side of each of said cut paper sheets, each flexographic printing station comprising:

(1) a blanket cylinder, said blanket cylinder including a flexographic plate having an image thereon for receiving a flexographic image on said blanket cylinder;

(2) an anilox roller for applying said flexographic image to said flexographic plate on said blanket cylinder; and

(3) an impression cylinder in image-transferring relationship with said blanket cylinder for transferring said flexographic image from said blanket cylinder to said cut paper sheets;

(c) providing at least one succeeding printing station subsequent to said flexographic printing stations, and being a lithographic printing station using offset lithography for printing one or more images on the reverse side of the side on which said flexographic image was printed; and

(d) providing a high velocity air dryer associated with the impression cylinder of each flexographic printing station for drying the flexographic image printed on said cut paper sheets.

96. (Amended) The method of Claim 94 wherein the printing of flexographic images is accomplished by the anilox roller being mounted in a flexographic printing station.

97. (Twice Amended) Apparatus for a combined lithographic and flexographic printing process for printing a multicolored image on a succession of sheets comprising:

(a) a plurality of successive printing stations for printing an image on a succession of sheets in a continuous in-line process, said printing stations including both lithographic and one or more flexographic printing station;

(b) said flexographic printing stations having:

(1) a blanket cylinder, said blanket cylinder including a flexographic plate having an image thereon for receiving a flexographic image on said blanket cylinder;

(2) an anilox roller for applying said flexographic image to said flexographic plate on said blanket cylinder; and

(3) an impression cylinder in an image-transfer relationship with said blanket cylinder for transferring said flexographic color image from said blanket cylinder to said succession of sheets;

at least one of said succeeding printing stations being a lithographic printing station subsequent to said flexographic printing stations, and using offset lithography for printing additional images on top of said flexographic image; and

(c) a high velocity air dryer associated with the impression cylinder of each flexographic printing station for quickly drying the flexographic image printed on said succession of sheets.

99. (Amended) The apparatus of Claim 97 where in the printing of flexographic images is accomplished by the anilox roller being mounted in a flexographic printing station.

100. (Twice Amended) Apparatus for a combined lithographic and flexographic printing process for printing multicolored images on a succession of sheets, comprising:

(a) a plurality of successive printing stations for printing images on one or both sides of a succession of sheets in a continuous in-line process said printing stations including both lithographic and one or more flexographic printing stations;

(b) said one or more flexographic printing stations having;

(1) a blanket cylinder, said blanket cylinder including a flexographic plate having an image thereon for receiving a flexographic image on said cylinder;

(2) an anilox roller for applying said flexographic image to said flexographic plate on said blanket cylinder; and

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- (3) an impression cylinder in an image-transferring relationship with said blanket cylinder for transferring said flexographic image from said blanket cylinder to said succession of sheets;
- (c) at least one of said succeeding printing stations being an offset lithographic printing station subsequent to said flexographic printing station, and using offset lithography for printing one or more additional images on the reverse side of the side on which said flexographic image was printed; and
- (d) a high velocity air dryer associated with the impression cylinder of each flexographic printing station for drying the flexographic image printed on said succession of sheets.

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102. (Amended) The apparatus of Claim 100 wherein the printing of flexographic images is accomplished by the anilox roller being mounted in a flexographic printing station.

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103. (Amended) Method of combining offset lithographic and flexographic printing in a single pass printing process, combining the steps of:

- (a) providing a plurality of successive offset lithographic printing stations for printing images on a substrate,
- (b) providing one or more flexographic printing stations prior to at least one of said offset lithographic printing stations for printing one or more flexographic images on said substrate, each of said flexographic printing stations comprising:
- (1) a blanket cylinder, said blanket cylinder including a flexographic plate having an image thereon for receiving the flexographic images on said blanket cylinder;
- (2) an anilox roller for applying said flexographic image to said flexographic plate on said blanket cylinder; and

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(3) an impression cylinder in image-transferring relationship with said blanket cylinder for transferring said flexographic images from said blanket cylinder to said substrate;

and

(c) providing a dryer associated with the impression cylinder of each flexographic printing station for drying the flexographic images printed on said substrate.

108. (Amended) The method of Claim 103 wherein the printing of the flexographic image is accomplished by the anilox roller being mounted in a flexographic printing station.

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109. (Amended) Method of combining offset lithographic and flexographic printing in a continuous in-line printing process, combining the steps of:

(a) providing a plurality of successive offset lithographic sheet-fed printing stations for printing images on substrate;

(b) providing one or more flexographic stations prior to at least one of said offset lithographic printing stations for printing one or more flexographic images on said substrate, each flexographic printing station comprising:

(1) a blanket cylinder, said blanket cylinder including a flexographic plate having an image thereon for receiving said flexographic images on said blanket cylinder;

(2) an anilox roller for applying said flexographic images to said flexographic plate on said blanket cylinder; and

(3) an impression cylinder in image-transferring relationship with said blanket cylinder for transferring said flexographic images from said blanket cylinder to said substrate;

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(c) after said flexographic printing, stations, one or more succeeding offset lithographic printing stations for printing one or more images on the reverse side of the side on which said flexographic images was printed; and

(d) providing a dryer associated with the impression cylinder of each flexographic printing station for drying the flexographic images printed on said substrate.

113. (Amended) The method of Claim 108 wherein the printing of one or more flexographic images is accomplished by the anilox roller being mounted in a flexographic printing station.

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114. (Amended) Apparatus for a combined offset lithographic and flexographic single pass printing process for printing one or more images on a substrate, comprising:

(a) a plurality of successive offset lithographic printing stations for printing lithographic images on a substrate;

(b) one or more flexographic printing stations prior to at least one of said offset lithographic printing stations for printing one or more flexographic images on said substrate, each of said flexographic printing stations having:

(1) a blanket cylinder, said blanket cylinder including a flexographic plate having an image thereon for receiving said one or more flexographic images on said blanket cylinder;

(2) an anilox roller for applying said one or more flexographic images to said flexographic plate on said blanket cylinder; and

(3) an impression cylinder in an image-transfer relationship with said blanket cylinder for transferring said one or more flexographic images from said blanket cylinder to said substrate; and



(c) a dryer associated with the impression cylinder of each flexographic printing stations for quickly drying said one or more flexographic images printed on said substrate.

115. (Amended) The apparatus of Claim 114 wherein the printing process is continuous in-line.

116. (Amended) The apparatus of Claim 114 wherein the substrate comprises cut paper sheets.

117. (Amended) The apparatus of Claim 114 wherein the printing of one or more flexographic images is accomplished by the anilox roller being mounted in an auxiliary retractable coater unit adapted to engage said flexographic plate on said blanket cylinder.

118. (Amended) The apparatus of Claim 112 where in the printing of flexographic images is accomplished by the anilox roller being mounted in a flexographic printing station.

119. (Amended) Apparatus for a combined lithographic and flexographic continuous in-line printing process for printing one or more images on substrates comprising:

- (a) a plurality of successive offset lithographic printing stations for printing images on said substrates;
- (b) one or more flexographic printing stations prior to at least one of said offset lithographic printing stations for printing one or more flexographic images on said substrates, each of said flexographic printing stations having;
  - (1) a blanket cylinder, said blanket cylinder including a flexographic plate having an image thereon for receiving one or more flexographic images on said cylinder;

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- (2) an anilox roller for applying said flexographic images to said flexographic plate on said plate cylinder; and
  - (3) an impression cylinder in an image transferring relationship with said blanket cylinder for transferring said flexographic images from said blanket cylinder to said substrates;
  - (c) at least one of said succeeding printing stations being a lithographic printing station using offset lithographic for printing, one or more additional images on the reverse side of said substrates on which said flexographic image was printed; and
  - (d) dryer associated with the impression cylinder of each flexographic printing station for drying the flexographic images printed on said substrates.
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120. (Amended) The apparatus of Claim 117 wherein the printing process is intended for a succession of cut paper sheets that are fed by a sheet feeder.

121. (Amended) The apparatus of Claim 119 wherein said substrates are a continuous web.

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123. (Amended) The apparatus of Claim 119 wherein the printing of one or more flexographic images is accomplished by the anilox roller being mounted in a flexographic printing station.

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124. (Amended) Method of combining offset lithographic and flexographic printing in a single pass printing process combining the steps of:

- (a) providing a plurality of offset lithographic printing stations for printing one or more images on a substrate;

(b) providing one or more flexographic printing stations prior to at least one of said plurality of offset lithographic printing stations for printing one or more flexographic images on said substrate; and

(c) providing a dryer associated with said one or more flexographic printing stations for drying said flexographic images printed on said substrate.

125. (Amended) Method of combining offset lithographic and flexographic printing in a continuous in-line printing process, combining the steps of:

(a) providing a plurality of offset lithographic printing stations for printing one or more images on a substrate;

(b) providing one or more flexographic printing stations prior to at least one of said plurality of offset lithographic printing stations for printing one or more flexographic images on said substrate;

(c) after said one or more flexographic printing stations, providing one or more succeeding printing offset lithographic printing stations for printing one or more images on the reverse side of the side on which said flexographic images were printed; and

(d) providing a dryer associated with said one or more flexographic printing stations for drying the flexographic images printed on said substrate.

130. (Amended) The method of Claim 124 or 125 wherein the printing of the flexographic image is accomplished by an anilox roller being mounted in a flexographic printing station.

*E 21* 137. (Amended) The method of Claim 124 or 125 wherein the flexographic images are printed with a liquid vehicle slurry containing an encapsulated essence.

*E 22* 141. (Amended) The apparatus of Claim 138 or 139 wherein the printing stations are for cut paper sheets.

*E 22* 142. (Amended) The apparatus of Claim 138 or 139 wherein the printing stations are for a continuous web.

*E 22* 144. (Amended) The apparatus of Claim 138 or 139 wherein the printing of the flexographic image is accomplished by an anilox roller being mounted in a flexographic printing station.

*E 22* 151. (Amended) The apparatus of Claim 138 or 139 wherein the flexographic images are printed with a liquid vehicle spin containing an encapsulated essence.

#### REMARKS

Claims 1-151 are pending in the application. The Examiner has rejected claims 6-11, 15-38, and 42-151. Claims 1-5, 12-14, and 39-41 have been allowed. Applicants gratefully acknowledge the Examiner's allowance of claims 1-5, 12-14, and 39-41. As the Examiner has indicated, applicants also acknowledge that amendments to the specification and claims must comply with 37 C.F.R. § 1.121 and sincerely appreciate the Examiner's waiver of that requirement for amended claims 91, 94, 97, and 100 as submitted on March 12, 2001.